ASYNCHRONOUS MODULATION AND DEMODULATION FOR SPREAD SPECTRUM AND CODE-DIVISION MULTIPLE ACCESS COMMUNICATION

Yi Zheng, Sartell, Minnesota, USA

Aiping Yao, St. Cloud, Minnesota, USA

CROSS-REFERENCE TO RELATED APPLICATIONS

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ABSTRACT

The present invention of the modulation and demondulation removes the carry synchronization requirement for spread spectrum systems and code-division multiple access communication systems. The invention uses the PN codes that are specially selected and asynchronous demodulation procedure. If number of transmitters is limited, the multiple access interference (MAI) due to carry differences of transmitters can be completely cancelled. Using this invention, signal from a desired transmitter can be demodulated and detected among received signals from other transmitters in multiple access applications, even when the frequencies of transmitters are different from each other and are not synchronized with a receiver. The invention greatly reduces complexities of a wireless system where code division multiple access (CDMA) or spread spectrum is used. It expands applications of wireless communication. One of the applications is for a CDMA communication for multiple users without a centralized base station.